

# STATS IN BRIEF

U.S. DEPARTMENT OF EDUCATION

OCTOBER 2018

NCES 2019-404

## What High Schoolers and Their Parents Know About Public 4-Year Tuition and Fees in Their State

### AUTHORS

Erin Dunlop Velez  
Laura Horn  
RTI International

### PROJECT OFFICER

Elise M. Christopher  
National Center for Education Statistics

**Statistics in Brief** publications present descriptive data in tabular formats to provide useful information to a broad audience, including members of the general public. They address simple and topical issues and questions. They do not investigate more complex hypotheses, account for inter-relationships among variables, or support causal inferences. We encourage readers who are interested in more complex questions and in-depth analysis to explore other NCES resources, including publications, online data tools, and public- and restricted-use datasets. See [nces.ed.gov](https://nces.ed.gov) and references noted in the body of this document for more information.

### Although most students

aspire to a college education, and most parents want their children to attend college, many families are uninformed about the cost of attending college (Avery and Kane 2004; College Board 2010; Ikenberry and Hartle 1998; Ingels et al. 2011; Luna de la Rosa 2006; McPherson and Schapiro 1991). Most high school students and parents are unaware of the actual price of college, and those who offer their best approximations tend to overestimate rather than underestimate prices (Avery and Kane 2004; Horn, Chen, and Chapman 2003). Published college “sticker prices,” which few students pay, and media attention to high-cost private colleges and universities may contribute to students’ and families’ common misapprehensions about the price of attendance. Minority and low-socioeconomic-status (SES) families in particular are less knowledgeable than White or higher-SES families about college costs (Avery and Kane 2004; Bleemer and Zafar 2014; Horn, Chen, and Chapman 2003; Ikenberry and Hartle 1998).

This Statistics in Brief was prepared for the National Center for Education Statistics under Contract No. ED-IES-12-C-0095 with RTI International. Mention of trade names, commercial products, or organizations does not imply endorsement by the U.S. Government.

There may be serious consequences to being uninformed and unsure about college costs and financial aid. For example, uncertainty about college costs and the availability of financial aid has been associated with underenrollment among low-income and minority students (O'Connor, Hammack, and Scott 2010).

In addition, misconceptions about cost and financial aid may limit the colleges that low-income and minority students consider attending (Arnold 1995; College Board and Art & Science Group 2010; Hossler and Gallagher 1987; McDonough 1997; Perna and Titus 2004; Sallie Mae and Ipsos 2016; Warwick and Mansfield 2003). Disadvantaged students are more likely than other students to consider cost when deciding where to apply (Avery and Turner 2012; College Board Advocacy

and Policy Center 2011; Litten 1982; McDonough 1997) and therefore may be particularly affected by a lack of accurate cost information.

When students do not consider certain schools because of inaccurate perceptions of their cost, they may put their postsecondary success at risk. For example, research suggests that students are less likely to graduate if they attend 2-year rather than 4-year colleges (Cabrera, La Nasa, and Burkum 2001; Long and Kurlaender 2009) and less-selective instead of more-selective universities (Bowen and Bok 1998; Bowen, Chingos, and McPherson 2009; Carnevale and Strohl 2010; Kane 1998).

This Statistics in Brief explores student and parent perceptions of a main component of college costs, tuition and fees, using data from the High

School Longitudinal Study of 2009 (HSL:09). Data from three waves of HSL:09 are used in this report: the Base Year, the First Follow-up, and the 2013 Update. Base-year interviews took place during the fall term of the 2009–10 school year, when students were in 9th grade, and First Follow-up interviews were administered in the spring term of the 2011–12 school year, when most students were in 11th grade. The 2013 Update interviews took place during summer and fall of 2013, when most cohort members had completed high school.

The Base-year interview provides information on student characteristics and students' and parents' estimates of tuition and fees. The later waves provide measures of such outcomes as students' perceptions of college affordability and their plans for postsecondary education.

## KEY TERMS

**Actual average tuition and fees** refers to enrollment-weighted, in-state average tuition and fees calculated from Integrated Postsecondary Education Data System (IPEDS) data.

**Tuition and fee estimates** refers to students' and parents' estimates of tuition and fees for public 4-year institutions in their state.

**Accurate/close estimates** were within 25 percent above or below the actual average tuition and fees in their state.

**Overestimating** tuition and fees occurs when students' or parents' estimates of tuition and fees were more than 25 percent higher than the actual average tuition and fees in their state.

**Underestimating** tuition and fees occurs when students' or parents' estimates of tuition and fees were more than 25 percent lower than the actual average tuition and fees in their state.

Students' estimates of tuition and fees were derived from their answers to the following question in the Base-year student survey: "What is your best estimate of the cost of 1 year's tuition and mandatory fees at a public 4-year college in your state? Include the cost of courses and required fees such as student activity fees and student health fees. Do not include optional expenses such as room and board."

Although most analyses in this report include all students, one analysis was conducted at the state level for students in 10 states.<sup>1</sup> The state samples allow examination of state-level differences in students' perceptions of tuition and fees. There are large differences in tuition and fees

across states; for example, in 2009–10, average in-state tuition and fees at public 4-year institutions in the United States ranged from \$3,200 in Wyoming to \$12,000 in Vermont (Snyder and Dillow 2011). In addition, the amount of within-state variation in tuition and fees could lead to more student uncertainty about tuition and fees in some states than others.

In order to assess how realistic students' tuition and fee estimates were, this report incorporated institution-level data from the Integrated Postsecondary Education Data System (IPEDS). IPEDS provides institution-level measures of published in-state tuition and fees and fall enrollment counts, which were used to compute an

enrollment-weighted average of tuition and fees by state for the 2009–10 school year. The analyses compare students' and parents' estimates to the enrollment-weighted average tuition and fee totals within their state because students were asked to estimate the cost at "a public 4-year college in your state" rather than at particular institutions.

All comparisons of estimates were tested for statistical significance using the Student's *t* statistic, and all differences cited are statistically significant at the  $p < .05$  level.<sup>2</sup> Readers are cautioned not to draw conclusions regarding causality based on the descriptive findings presented in this report.

---

<sup>1</sup> For these 10 states, NCES designed the HSLs:09 sample so that it represented each state's population of 9th-grade students in schools that offered both 9th and 11th grades. Table 1 includes the only state-level analysis in this report.

<sup>2</sup> No adjustments for multiple comparisons were made. Point estimates for all figures can be found in appendix A. The standard errors for the estimates can be found in appendix B.

## STUDY QUESTIONS

**1** How do 9th-graders' and their parents' estimates of public 4-year tuition and fees differ from the actual average tuition and fees of public 4-year institutions in their state? Do students' and parents' estimates vary across student and family characteristics and among states?

**2** How uncertain are 9th-graders and their parents about their ability to estimate college tuition and fees, and how does their level of uncertainty change over the next 2 years?

**3** What are 9th graders' perceptions of college affordability and their future college-going plans?

### KEY FINDINGS

- Overall, 11 percent of 9th-graders in 2009 reported estimates of annual tuition and fees at a public 4-year university in their state that were close to the actual average tuition and fees. Fifty-seven percent overestimated tuition and fees, and 32 percent underestimated them (figure 1).
- When students were asked about their confidence in their tuition and fee estimates in 9th grade, 27 percent reported “not at all confident.” Two years later, when most students were in 11th grade, 51 percent reported that they did not know how much public 4-year colleges in their state charged for tuition and fees (figure 5).<sup>3</sup>
- One-quarter of 9th-graders disagreed or strongly disagreed that college was affordable (figure 7). Two years later, one-third of these students reported the same. In addition, the percentage of 9th-graders who planned to enroll in a bachelor’s degree program declined from 51 percent when they were in 9th grade to 45 percent 3 years later, when most students had just completed high school (figure 8).

<sup>3</sup> Ninth-graders were not given the opportunity to report “I don’t know” in estimating tuition and fees but instead were asked about their level of confidence in their ability to estimate tuition and fees.

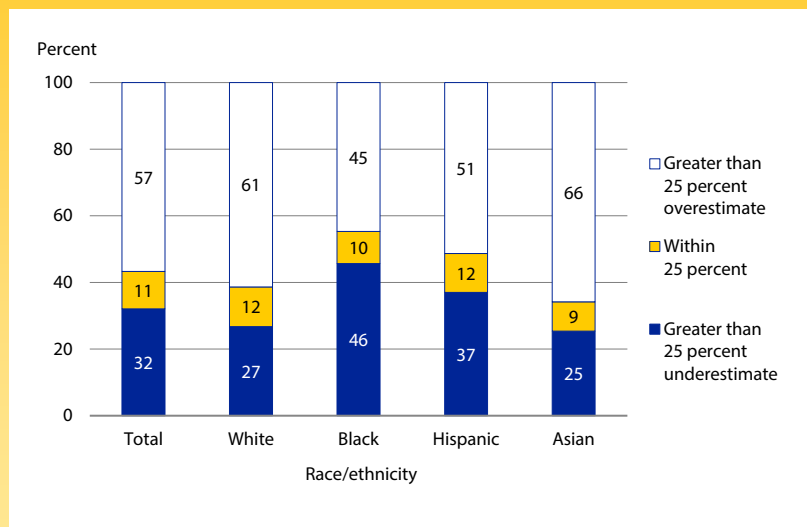
# 1

## How do 9th-graders' and their parents' estimates of public 4-year tuition and fees differ from the actual average tuition and fees of public 4-year institutions in their state? Do students' and parents' estimates vary across student and family characteristics and among states?

Overall, 11 percent of 2009 ninth-graders reported estimates of tuition and fees that were close to the actual average tuition and fees in their state. The majority of 9th-graders (57 percent) overestimated tuition and fees, and about one-third (32 percent) underestimated tuition and fees (figure 1). Tuition and fee estimates ranged from more than \$10,000 lower than the actual average tuition and fees in their state to more than \$90,000 higher (figure 2). The long right tail of the distribution shown in figure 2 depicts the 57 percent of 9th-graders who overestimated tuition and fees (figure 1).

**FIGURE 1.**

**DISTRIBUTION OF 9TH-GRADERS' OVER- OR UNDERESTIMATION OF TUITION COSTS BY RACE/ETHNICITY**  
**Percentage distribution of 9th-graders who over- or underestimated the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by race/ethnicity: 2009–10**



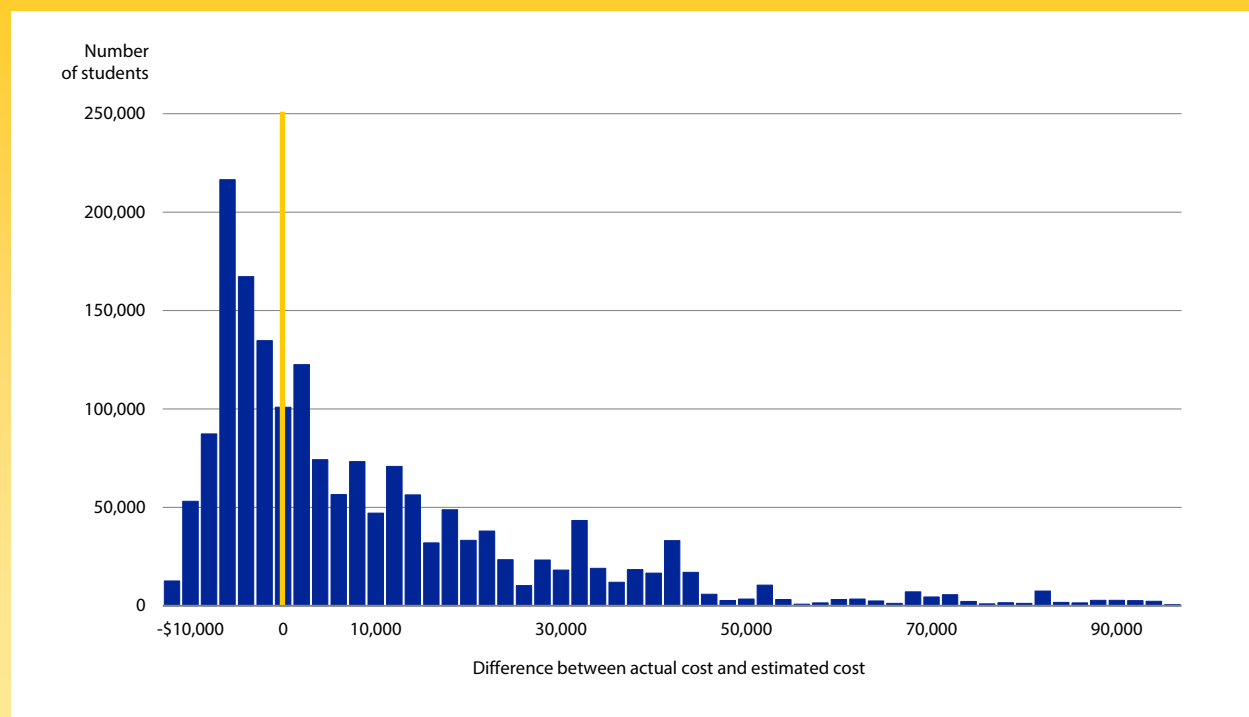
NOTE: Black includes African American, and Hispanic includes Latino. The following race categories are not shown individually, although they are included in the total: American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and individuals who indicated Two or more races. All race categories exclude Hispanic or Latino origin unless specified. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

## FIGURE 2.

### DIFFERENCE BETWEEN 9TH-GRADERS' ESTIMATES AND ACTUAL COST OF COLLEGE

Frequency of difference between 9th-graders' estimates and actual cost of 1 year of tuition and mandatory fees at a public 4-year college in their state: 2009–10



NOTE: Differences were computed by subtracting the actual, enrollment-weighted average cost from the student's estimate. Therefore, a positive difference indicates that the student's estimate was larger than the actual, enrollment-weighted average cost. The x-axis scale begins at -\$12,000, and the width of each column is \$2,000. The first column from the left indicates that 12,600 students underestimated the actual cost by \$10,000–\$12,000. The yellow line indicates \$0. Selected estimates are unstable. See table A-2 for detail.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

Students' estimates of tuition and fees varied by race/ethnicity. Among White, Hispanic, and Asian students, higher percentages of students overestimated than underestimated tuition and fees. In contrast, among Black students, the difference between the percentages

of students who underestimated and overestimated tuition and fees was not statistically significant.

Race/ethnicity differences also emerged among students who underestimated tuition and fees.

Whereas 46 percent of Black students and 37 percent of Hispanic students underestimated college tuition and fees, 27 percent of White students did the same.

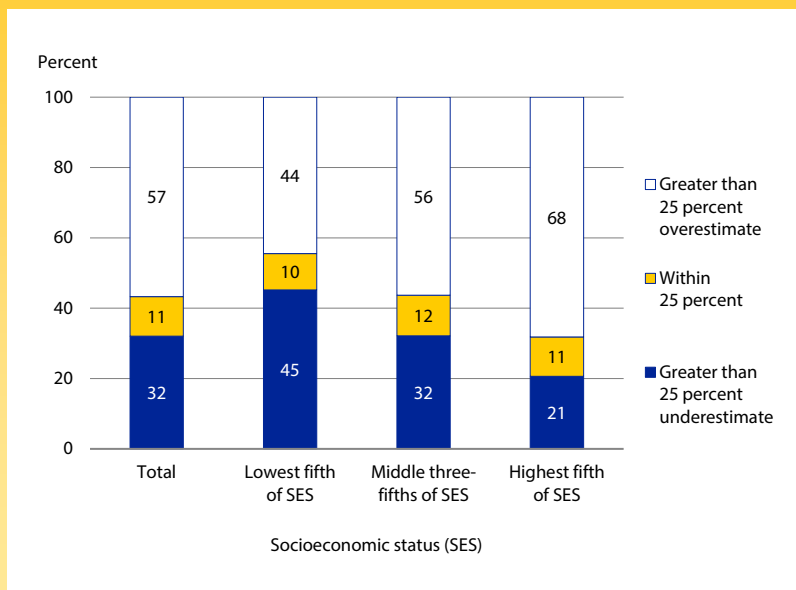
The percentage of students who under- and overestimated tuition and fees at a public 4-year institution in their state differed among students from different SES groups. Whereas 45 percent of students in the lowest fifth of the SES distribution underestimated tuition and fees, 32 percent in the middle three-fifths of the distribution and 21 percent in the highest fifth of the SES distribution did so. The percentage of students overestimating tuition and fees increased with SES (figure 3).

The distribution of estimates varied within SES groups as well. Among students in the middle three-fifths and the highest fifth of the SES distribution, proportionally more students overestimated tuition and fees than underestimated them.

Among middle-SES students, 56 percent overestimated tuition and fees, and 32 percent underestimated them. Among high-SES students, 68 percent overestimated and 21 percent underestimated. There was no statistically significant difference between the percentages of students who under- and overestimated tuition in the lowest fifth of the SES distribution, however.

**FIGURE 3.**

**DISTRIBUTION OF 9TH-GRADERS' OVER- OR UNDERESTIMATES OF TUITION COSTS BY SOCIOECONOMIC STATUS**  
**Percentage distribution of 9th-graders who over- or underestimated the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by socioeconomic status (SES): 2009–10**



NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.



Among the 10 states for which HSLS:09 included state-representative samples of students, average annual in-state tuition and fees ranged from \$3,600 in Florida to \$10,600 in Pennsylvania (table 1). The mean difference between students' estimates and the actual tuition and fees ranged from \$7,200 in Georgia to \$13,800 in Florida. The mean difference between parents' estimates of tuition and fees and the actual average tuition and fees ranged from \$5,700 in Michigan to \$13,100 in Florida.

**TABLE 1.**

**9TH-GRADERS' AND PARENTS' TUITION ESTIMATES, ACTUAL AVERAGE TUITION, AND CONFIDENCE, BY STATE**  
**Students' and parents' estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, the actual average in-state annual cost, and students' and parents' confidence in their estimates, by state: 2009–10**

State	Actual enrollment-weighted average in-state annual cost	Median difference	Mean difference	Percent very confident
Students				
<b>U.S. total</b>	<b>\$6,800</b>	<b>\$3,700</b>	<b>\$10,500</b>	<b>14.0</b>
California	6,300	1,700 !!	9,400	12.8
Florida	3,600	6,400	13,800	16.8
Georgia	5,300	‡	7,200	17.4
Michigan	9,500	2,500 !!	8,300	15.0
North Carolina	4,600	7,400	13,400	14.9
Ohio	8,100	2,400 !!	10,300	14.7
Pennsylvania	10,600	‡	7,500	17.3
Tennessee	6,100	3,900 !	10,200	18.0
Texas	6,500	3,500	9,700	13.8
Washington	6,300	3,700	9,300	10.5
Parents				
<b>U.S. total</b>	<b>6,800</b>	<b>5,400</b>	<b>8,800</b>	<b>12.9</b>
California	6,300	5,700	9,800	13.3
Florida	3,600	7,400	13,100	9.6
Georgia	5,300	4,700	7,900	10.4
Michigan	9,500	2,500 !!	5,700	14.5
North Carolina	4,600	7,400	10,300	11.2
Ohio	8,100	6,900	8,100	13.2
Pennsylvania	10,600	4,400	8,400	15.3
Tennessee	6,100	3,900	8,600	12.0
Texas	6,500	5,500	10,800	10.4
Washington	6,300	5,700	9,500	13.0

! Interpret data with caution. Estimate is unstable because the standard error is between 30 and 50 percent of the estimate.

!! Interpret data with caution. Estimate is unstable because the standard error is greater than 50 percent of the estimate.

‡ Reporting standards not met (too few cases for a reliable estimate or the standard error is greater than or equal to the estimate).

NOTE: The states listed have state-representative samples. Differences were computed by subtracting the actual, enrollment-weighted average cost from the student's or parent's estimate. Therefore, a positive difference indicates that the student's/parent's estimate was larger than the actual, enrollment-weighted average cost.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10 and Integrated Postsecondary Education Data System (IPEDS), 2009.



## 2 How uncertain are 9th-graders and their parents about their ability to estimate college tuition and fees, and how does their level of uncertainty change over the next 2 years?

Nationwide, 14 percent of 9th-graders and 13 percent of their parents were very confident of their estimates of tuition and fees for 1 year at a public 4-year college in their state (table 1). The percentage of students who were very confident of their estimates varied from 10 percent (Washington) to 18 percent (Tennessee).

Confidence in college tuition and fee estimates varied by SES as well as by state. Among families in the lowest

fifth of the SES distribution, 18 percent of students were “very confident” in their estimate, compared with 8 percent of their parents (figure 4). Among families in the highest fifth of the SES distribution, the opposite pattern was found: 10 percent of students were “very confident” in their estimate, compared with 18 percent of parents who reported the same.

Focusing on differences among students, 10 percent of students whose

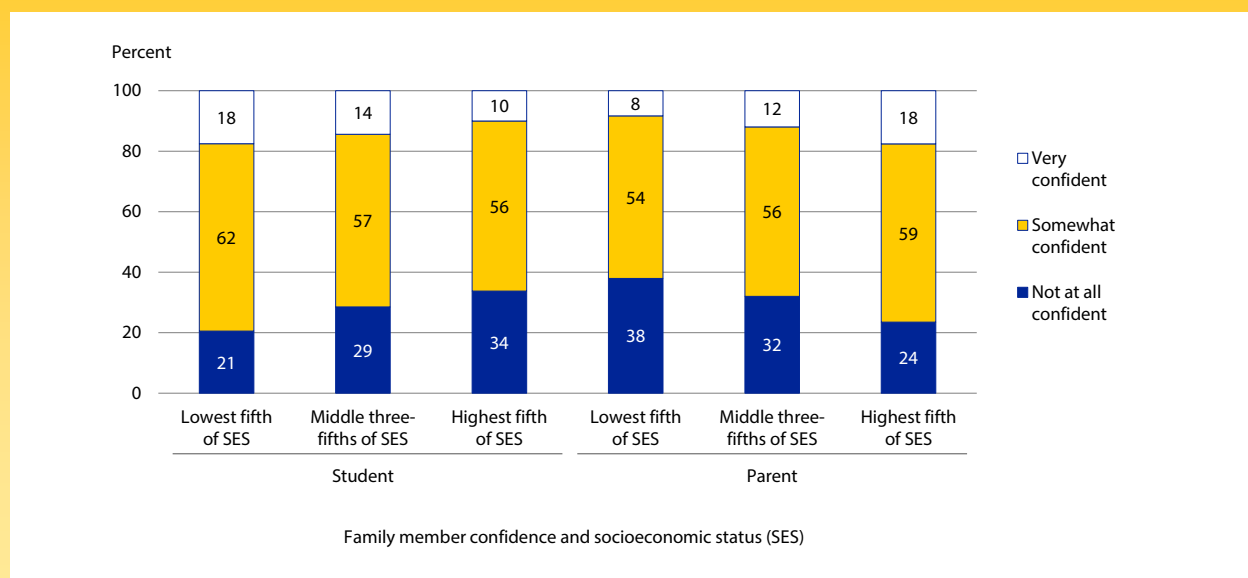
families were in the highest SES group were “very confident” of their tuition and fee estimate, compared with 18 and 14 percent among the lowest and middle SES groups, respectively.

Among parents, 18 percent in the highest SES group were “very confident” in their estimate of tuition and fees, compared with 12 percent in the middle SES group and 8 percent in the lowest SES group.

**FIGURE 4.**

### CONFIDENCE IN ESTIMATED TUITION COST BY SOCIOECONOMIC STATUS

Percentage distribution of 9th-graders' and their parents' level of confidence in their estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by family socioeconomic status (SES): 2009–10



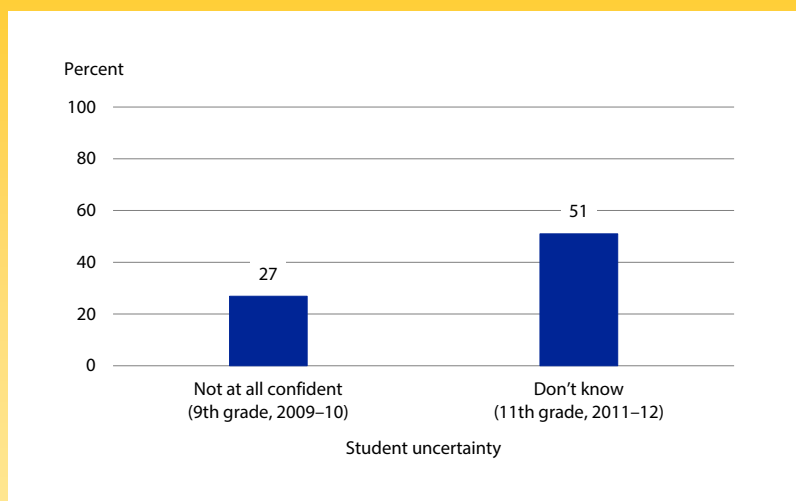
NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

Student perceptions of tuition and fees evolved over time, but both in 9th grade and 2 years later, when most students were in 11th grade, students reported substantial uncertainty in their ability to estimate tuition and fees. In 9th grade, about one-quarter (27 percent) reported they were “not at all confident” in their ability to estimate tuition and fees in their state (figure 5). When asked to estimate tuition and fees at a public 4-year college 2 years later, about half (51 percent) responded “I don’t know.”<sup>4</sup>

**FIGURE 5.**

**STUDENT UNCERTAINTY ABOUT COLLEGE TUITION COSTS**  
**Percentage of students who were not at all confident in their estimate of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state or who did not know the cost: 2009–10 and 2011–12**



NOTE: Students were interviewed in 2009–10 when they were in 9th grade and again in 2011–12 when on-track students were in 11th grade. Estimate for 11th grade includes all students interviewed in 2011–12, regardless of whether they were in 11th grade at the time. Ninth-graders were not given the opportunity to report “I don’t know” in estimating tuition but instead were asked about their level of confidence in their ability to estimate tuition and fees.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and First Follow-up, 2011–12.

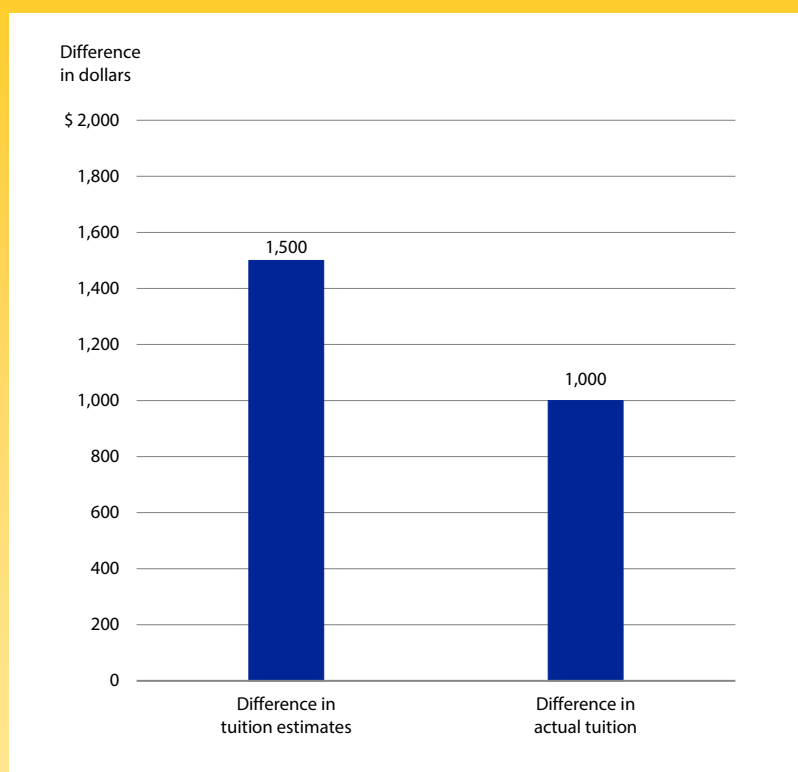
<sup>4</sup> Ninth-graders were not given the opportunity to report “I don’t know” in estimating tuition and fees but instead were asked about their level of confidence in their ability to estimate tuition and fees.

# 3 What are 9th graders' perceptions of college affordability and their future college-going plans?

The tuition and fee estimates of students who provided them both in 9th grade and 2 years later increased over time.<sup>5</sup> Even though students tended to overestimate college tuition and fees in 9th grade (figure 3), their estimates of tuition and fees were, on average, \$1,500 higher in 11th grade (figure 6). Over this time, the national average enrollment-weighted tuition and fees increased by \$1,000, from \$6,700 in 2009–10 to \$7,700 in 2011–12 (Snyder and Dillow 2011, 2013).

**FIGURE 6.**

**STUDENT-ESTIMATED AND ACTUAL COLLEGE TUITION DIFFERENCES**  
**Mean difference between students' 9th- and 11th-grade estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state and the actual difference in mean in-state tuition and mandatory fees at these schools between 2009–10 and 2011–12**



NOTE: The students were interviewed in 2009–10 when they were in 9th grade and again in 2011–12 when on-track students were in 11th grade. Estimates for 11th grade include all students interviewed in 2011–12, regardless of whether they were in 11th grade at that time. Differences were computed by subtracting the student's estimate in 9th grade from his or her estimate in 11th grade. Therefore, a positive difference indicates that the student's estimate was larger in 11th grade than in 9th grade.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10 and First Follow-up, 2011–12. Snyder, T.D., and Dillow, S.A. (2011). *Digest of Education Statistics, 2010* (NCES 2011-015), Table 346. U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics. Snyder, T.D., and Dillow, S.A. (2013). *Digest of Education Statistics, 2012* (NCES 2014-015), Table 382. U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics.

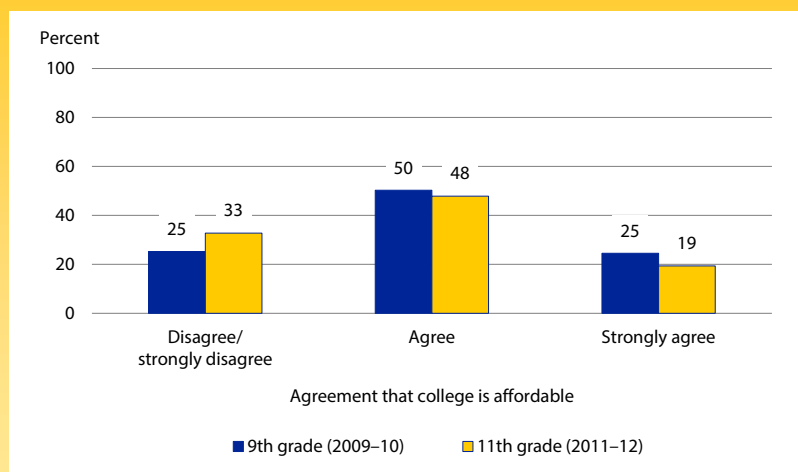
<sup>5</sup> All students who were interviewed in 2011–12 were included in the 11th-grade estimates, even if they were not in 11th grade.

In addition to the increase in their tuition and fee estimates, the percentage of students who disagreed or strongly disagreed that college was affordable also increased over the 2 years.<sup>6</sup> In 9th grade, one-quarter (25 percent) of students disagreed or strongly disagreed that college was affordable (figure 7). Two years later, one-third (33 percent) disagreed or strongly disagreed. At the same time, the percentage of students who strongly agreed that college was affordable decreased from one-quarter (25 percent) to about one-fifth (19 percent).

Along with a decrease in the percentage of students who thought college was affordable, students' college plans also changed between 9th grade and the summer or fall of 2013, after most students completed high school. The percentage of students planning to enroll in a bachelor's degree program declined from 51 percent to 45 percent over this time, and the percentage of students who planned to enroll in programs below the bachelor's degree level increased from 15 percent to 23 percent (figure 8).

**FIGURE 7.**

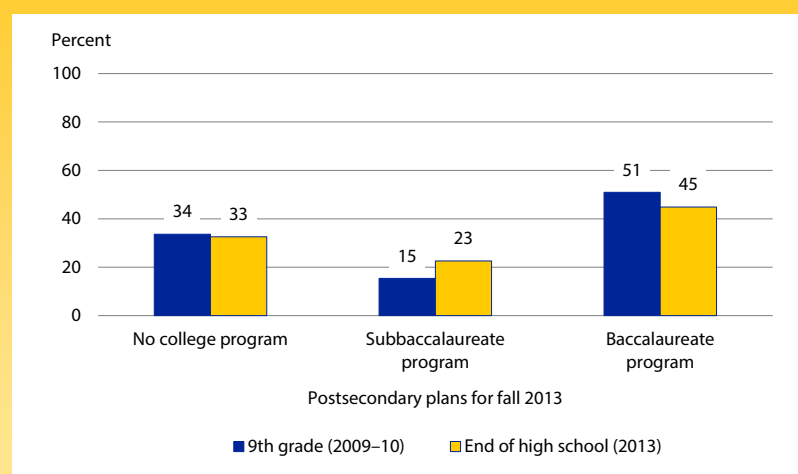
**STUDENTS' PERCEPTIONS OF COLLEGE AFFORDABILITY**  
**Percentage distribution of students' agreement that college is affordable, by student grade level: 2009–10 and 2011–12**



NOTE: The students were interviewed in 2009–10 when they were in 9th grade and again in 2011–12 when on-track students were in 11th grade. Estimates for 11th grade include all students interviewed in 2011–12, regardless of whether they were in 11th grade at that time. Detail may not sum to totals because of rounding.  
 SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and First Follow-up, 2011–12.

**FIGURE 8.**

**STUDENTS' COLLEGE ENROLLMENT PLANS**  
**Percentage distribution of students' postsecondary education plans for the first year after high school, by student grade level: 2009–10 and 2013**



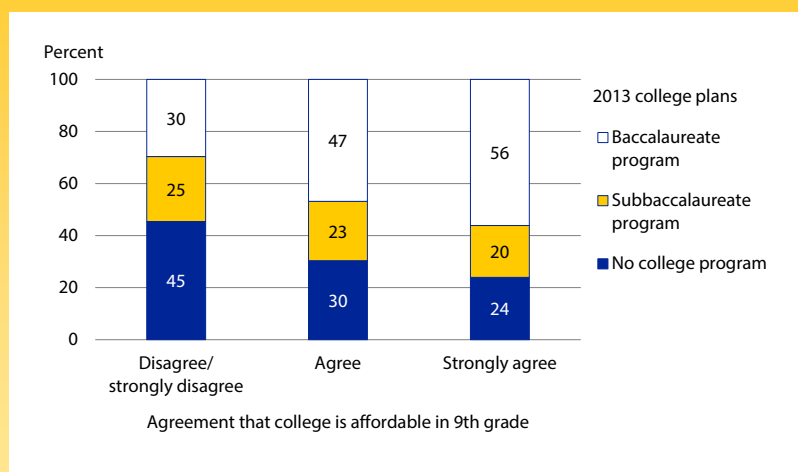
NOTE: The students were interviewed in 2009–10 when they were in 9th grade and again in summer or fall of 2013 when on-track students had just completed their 12th-grade year. Estimates for 2013 include all students interviewed in 2013, regardless of whether they had completed 12th grade at the time. Subbaccalaureate programs are any college programs below the bachelor's degree level, such as certificate or associate's degree programs. Detail may not sum to totals because of rounding.  
 SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and 2013 Update.

<sup>6</sup> The survey question asked about perceptions of unaffordability (as opposed to affordability) (figure 7). For ease of exposition, however, responses were reverse coded in the figure and text to frame the discussion about affordability.

Students' perceptions of college affordability in 9th grade were related to their college plans 4 years later, in summer or fall of 2013.<sup>2</sup> Among students who disagreed or strongly disagreed that college was affordable, 30 percent planned to enroll in a bachelor's degree program, and 45 percent did not plan to attend college (figure 9). Among students who agreed or strongly agreed that college was affordable, however, proportionally more (47 and 56 percent, respectively) planned to enroll in a bachelor's degree program and proportionally fewer, 30 percent and 24 percent, respectively, reported that they did not plan to attend college.

**FIGURE 9.**

**STUDENTS' COLLEGE PLANS BY PERCEPTIONS OF COLLEGE AFFORDABILITY**  
**Percentage distribution of students' 2013 plans for the first year after high school, by their perceptions of college affordability in 9th grade: 2009–10 and 2013**



NOTE: The student's perceived affordability of college was measured in 2009–10 when the student was in 9th grade. The student's college plans were measured in summer or fall of 2013 when on-track students had just completed their 12th-grade year. Subbaccalaureate programs are any college programs below the bachelor's degree level, such as certificate or associate's degree programs. Detail may not sum to totals because of rounding.  
 SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10 and 2013 Update.

<sup>2</sup>The survey question asked about perceptions of unaffordability (as opposed to affordability) (figure 9). For ease of exposition, however, responses were reverse coded in the figure and text to frame the discussion about affordability.

## FIND OUT MORE

For questions about content, to order additional copies of this Statistics in Brief, or to view this report online, go to

**<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019404>**

More detailed information on 2009–10 U.S. 9th-grade students can be found in First Look and Web Table publications produced by the National Center for Education Statistics (NCES) using the HSLs:09 data. These publications include estimates of demographics, academic experiences, and school characteristics.

First Look—*High School Longitudinal Study of 2009 (HSLs:09): A First Look at Fall 2009 Ninth-Graders* (NCES 2011-327).  
<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011327>

First Look—*High School Longitudinal Study of 2009 (HSLs:09): A First Look at Fall 2009 Ninth-Graders' Parents, Teachers, School Counselors, and School Administrators* (NCES 2011-355).  
<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2011355>

First Look—*High School Longitudinal Study of 2009 (HSLs:09): First Follow-up: A First Look at Fall 2009 Ninth-Graders in 2012* (NCES 2014-360).  
<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2014360>

Web Tables—*High School Dropouts and Stopouts: Demographic Backgrounds, Academic Experiences, Engagement, and School Characteristics* (NCES 2015-064).  
<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015064>

A Statistics in Brief report documenting students' math coursetaking and education plans is also available:

Stats in Brief—*Ninth-Graders' Mathematics Coursetaking, Motivations, and Educational Plans* (NCES 2015-990).  
<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015990>

## TECHNICAL NOTES

Data in this report come from two sources, HSLs:09 and IPEDS. HSLs:09 is a longitudinal sample survey collected by NCES. The following section describes the survey methodology for HSLs:09, the survey's response rates, the procedures used to test for statistical significance, and the variables used for the analysis in this report. More detailed information on the survey methodology and response rates is available in the HSLs:09 data file documentation (Ingels et al. 2015).

IPEDS is a system of interrelated surveys conducted annually by NCES. IPEDS gathers information from every college, university, and technical and vocational institution that participates in federal student aid programs. IPEDS collects data on enrollments, program completions, graduation rates, faculty and staff, finances, institutional prices, and student financial aid. The data used to create the state-level enrollment-weighted average tuition and fees presented in this report were collected through the enrollment and institutional prices surveys. The IPEDS variables used in this study are described below.

### Survey Methodology

Starting with a cohort of students who were in the 9th grade in fall 2009, HSLs:09 follows students throughout their high school and early adult years to understand their trajectories from the beginning of high school into postsecondary education, the workforce, and beyond. The estimates provided in this Statistics in Brief are from data collected in three waves of HSLs:09 interviews: the Base Year, the First Follow-up, and the 2013 Update.

The Base-year and First Follow-up surveys included both student and parent questionnaires. The 2013 Update included a questionnaire that could be completed by the student or his or her parent. In both the Base-year and First Follow-up interviews, the student questionnaire collected information on students' demographic characteristics, perceptions of college affordability, estimates of college tuition and fees, and future postsecondary plans. The parent questionnaires included family background information as well as the parents' estimates of college tuition and fees. The 2013 Update was brief and focused on students' post-high school plans. In all waves, students and parents

provided data through instruments administered over the Internet or by telephone. Additional data were collected from selected teachers, school counselors, and school administrators and from students' transcripts.

The sample design for HSLs:09 included both school and student target populations. The school target population consisted of regular public schools (including public charter schools) and private schools in the 50 United States and the District of Columbia that provided instruction to students in both the 9th and 11th grades (exhibit 1). The corresponding target population for

### Exhibit 1. Characteristics and summary statistics for HSLs:09

Characteristic or statistic	HSLs:09
Target population	9th-grade students in fall 2009
Target population size	4.1 million
Sampling frame (institutions)	2005–06 and 2006–07 Common Core of Data (CCD), 2005–06 and 2007–08 Private School Universe Survey (PSS)
Number of sampled schools	1,973
Number of eligible schools	1,889
Number of participating schools <sup>1</sup>	944
Percent of eligible schools that participate (weighted) <sup>2</sup>	55.5
Average number of sampled students per school	27
Number of sampled students	26,305
Number of eligible students	25,206
School questionnaire response rate (base-year weight) <sup>3</sup>	94.5
Student questionnaire response rate (base-year weight) <sup>3</sup>	85.7
Parent questionnaire response rate (base-year weight) <sup>3</sup>	67.5
Student questionnaire response rate for the First Follow-up (base-year and First Follow-up weight) <sup>3</sup>	74.3
Student questionnaire response rate for the 2013 Update (base-year and 2013 Update weight) <sup>3</sup>	67.6

<sup>1</sup> "Participating" schools provided student enrollment lists.

<sup>2</sup> Weighted by school-level weight.

<sup>3</sup> Weighted by student-level weight indicated in label.

SOURCE: Ingels, S.J., Pratt, D.J., Herget, D.R., Burns, L.J., Dever, J.A., Ottem, R., Rogers, J.E., Jin, Y., and Leinwand, S. (2011). *High School Longitudinal Study of 2009 (HSLs:09). Base-Year Data File Documentation* (NCES 2011-328). U.S. Department of Education. Washington, DC: National Center for Education Statistics; and Ingels, S.J., Pratt, D.J., Herget, D., Bryan, M., Fritch, L.B., Ottem, R., Rogers, J.E., and Wilson, D. (2015). *High School Longitudinal Study of 2009 (HSLs:09) 2013 Update and High School Transcript Data File Documentation* (NCES 2015-036). U.S. Department of Education. Washington, DC: National Center for Education Statistics.



students was all 9th-grade students who attended target-population schools in fall 2009.

A two-stage process was used to sample students. First, a stratified, random sample of schools (stratified on school type or sector, region, and locale) identified 1,889 eligible schools. The weighted school unit response rate of that stage was 56 percent. In the second stage of sampling, 25,206 eligible students (about 27 students per school) were randomly selected from school enrollment rosters. Of the eligible students, 24,658 were classified as capable of completing a questionnaire or an assessment, and the weighted student unit response rate was 86 percent for the Base-year interview, 74 percent for both the Base-year and First Follow-up interviews, and 68 percent for both the Base-year and 2013 Update interviews. Estimates were weighted to adjust for the unequal probability of selection into the sample and for nonresponse.

Two broad categories of error occur in estimates generated from surveys: sampling and nonsampling errors. Sampling errors occur when observations are based on samples rather than on entire populations. The standard error of a sample statistic is a measure of the variation due to sampling and indicates the precision of the statistic, that is, how close to the population value the estimated statistic is likely

to be. The complex sampling designs used in HSLs:09 must be taken into account when calculating such variance estimates as standard errors. The variance for the estimates in this Statistics in Brief was calculated using balanced repeated replication to accommodate the complex sample design (Wolter 2007).

Nonsampling errors can be attributed to several sources: incomplete information about all respondents (e.g., some students or schools refused to participate or students participated but answered only certain items); differences among respondents in question interpretation; inability or unwillingness to give correct information; mistakes in recording or coding data; and other errors of collecting, processing, and imputing missing data. Standard quality-control procedures were followed in the HSLs:09 data collection process in order to minimize nonsampling errors.

For more information on HSLs:09 methodology, see the *High School Longitudinal Study of 2009 (HSLs:09) 2013 Update and High School Transcript Data File Documentation* (<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015036>).

Variable names in all capital letters are from the HSLs:09 data. Variable names not in all capital letters were created

using HSLs:09 or IPEDS variables for this report. StudentCostTuition09 was created using S1COSTIN, S1ESTFEE, S1ESTIN, and S1FEEIN in HSLs:09. ParentCostTuition09 was created using P1COSTIN, P1ESTFEE, P1ESTIN, and P1FEEIN in HSLs:09.

For StudentCostTuition09 and ParentCostTuition09, the four variables were needed because everyone was asked the cost question, but the responses were recorded under different variable names, depending on survey routing. Additionally, the question asked students and parents to include only tuition and mandatory fees (not room and board) in their estimate, but a follow-up question was used to determine whether students actually included room and board. Students who answered the question incorrectly, and included room and board in their estimate, were excluded from the analysis of that survey item.

ActualTuition09 was created using CHG2AY3, EFTOTLT, FIPS, SECTOR, STABBR, and UNITID from IPEDS and was merged into the HSLs:09 data using X1STATE. These variables were used to create an enrollment-weighted tuition and fees measure for each state. StudentAccuracyBuckets09 and StudentDifference09 were created by subtracting ActualTuition09 from StudentCostTuition09. Likewise, ParentDifference09 was created by subtracting ActualTuition09 from ParentCostTuition09. Difference0911

was creating by subtracting AllStudentCostTuition09 from StudentCostTuition11.<sup>8</sup> StudentPctActualCost was created by dividing StudentCostTuition09 by ActualTuition09, and ParentPctActualCost was created by dividing ParentCostTuition09 by ActualTuition09. EducationPlan09 was created using S1FYAA, S1FYBA, and S1FYLICENSE. CollegePlans was created using S3CLASSES and S3PROGLEVEL.

Estimates based on student data from the Base-year interview were computed using the sample weight W1STUDENT and replicate weights W1STUDENT001–W1STUDENT200. Estimates based on parent data from the Base-year interview were computed using the sample weight W1PARENT and replicate weights W1PARENT001–W1PARENT200. Estimates based on student data from the Base-year and First Follow-up interviews were computed using the sample weight W2W1STU and replicate weights W2W1STU001–W2W1STU200. Estimates based on student data from the Base-year and 2013 Update interviews were computed using the sample weight W3W1STU and replicate weights W3W1STU001–W3W1STU200.

<sup>8</sup> AllStudentCostTuition09 was used to create Difference0911, instead of StudentCostTuition09, because of a change in question wording between 9th and 11th grades. AllStudentCostTuition09 is similar to the StudentCostTuition09 variable used in the other figures except that students who report that their estimate includes room and board are not excluded. This is because, in 11th grade, students were not asked if their estimate included room and board, so in order to make the over-time comparison comparable, students who included room and board in their estimate in 9th grade were not removed when Difference0911 was created. StudentCostTuition11 was created using S2COST4YPUB.

## VARIABLES USED

The variables used in this report are listed below. The measures of average enrollment-weighted tuition and fees by state in 2009–10 and 2011–12 were constructed from variables found in IPEDS. The IPEDS variables included in this report can be found on the IPEDS Data Center website at <https://nces.ed.gov/ipeds/datacenter/>. This source provides detailed information on question wording and variable coding.

The remaining variables were taken or derived from variables on the HSLs:09 restricted-use data files. A list of all HSLs:09 variables available on the restricted-use or public-use data files is available at the NCES website: [https://nces.ed.gov/surveys/hsls09/hsls09\\_data.asp](https://nces.ed.gov/surveys/hsls09/hsls09_data.asp). The program files that derived variables and generated the statistics presented in this Statistics in Brief can be found at <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2019404>.

Label	Name
9th-grader thinks, even if he/she studies, family can't afford college	S1AFFORD
9th-grader's confidence in estimate of cost for public 4-year college	S1ESTCONF
9th-grader's estimate of tuition and fees	StudentCostTuition09
9th-grader's over- or underestimation of tuition and fees	StudentAccuracyBuckets09
9th-grader's plans for the first year after high school	EducationPlan09
11th-grader's cost estimate of tuition/mandatory fees at public 4-year college	S2COST4YPUB
Actual average tuition and fees	ActualTuition09
Difference between 9th-grader's estimate and the actual average tuition and fees	StudentDifference09
Difference between 11th- and 9th-grade tuition and fee estimates	Difference0911
Difference between parent's estimate and the actual average tuition and fees	ParentDifference09
End-of-high-schooler's plans for the first year after high school	CollegePlans
Even if 11th-grader is accepted to college, family can't afford to send teen	S2CANTAFFORD
Parent's confidence in estimate of cost for public 4-year college	P1ESTCONF
Parent's estimate of tuition and fees	ParentCostTuition09
Percent of 9th-grader's estimate of actual average tuition and fees	StudentPctActualCost
Percent of parent's estimate of actual average tuition and fees	ParentPctActualCost
Quintile of socioeconomic status	X1SESQ5
State	X1STATESAMPL
Student's race/ethnicity	X1RACE

## Response Rates

NCES Statistical Standard 4-4-1 states that “[a]ny survey stage of data collection with a unit or item response rate less than 85 percent must be evaluated for the potential magnitude of nonresponse bias before the data or any analysis using the data may be released” (Seastrom 2014). For this Statistics in Brief, this requirement covers both unit response rates—representing the percentage of schools completing the school questionnaire, the percentage of parents completing the parent questionnaire, and the percentage of students completing the student questionnaire—and item response rates for each of the items within these surveys that were used in this analysis.

The (weighted) unit response rates were 68 percent for the parent questionnaire and 86 percent for the student questionnaire. Although

unit-level nonresponse bias analysis was required only for the parent questionnaire, nonresponse bias analysis was also performed for the student questionnaire because student-level response rates were below the 85 percent level for groups of respondents that shared some of the school and student characteristics examined. These analyses determined whether there were statistically significant differences between estimates calculated for questionnaire respondents and those for nonrespondents. Nonresponse bias analysis results were used to adjust the analysis weights to minimize identified differences. Exhibit 2 provides a summary of the results of nonresponse bias analyses before and after the weights were adjusted to account for nonresponse.

For the student nonresponse bias analysis, some information on

nonresponding students was available from schools’ enrollment lists. This information and school characteristics were used to compare estimates for respondents to those for nonrespondents and to adjust the student weight for nonrespondents accordingly. Additional information was not available for nonresponding parents, however. Therefore, the student and school characteristics used in the student-level nonresponse bias analysis were used to calibrate the final student weight to create the parent analysis weight.

At the item level, 11 of the variables used for the analyses in this report required nonresponse bias analysis due to response rates below 85 percent: P1COSTIN (45 percent), P1ESTCONF (69 percent), P1ESTFEE (68 percent), P1ESTIN (69 percent), P1FEEIN (44 percent), S1COSTIN (39 percent), S1ESTCONF (73 percent), S1ESTFEE (72 percent), S1ESTIN (74 percent),

**Exhibit 2. Response rates and summary statistics for nonresponse bias analyses, by HSL:09 analytic weight**

Analytic weight	Weighted response rate	Number of t-tests	Percent of tests with bias <sup>1</sup>		Median absolute relative bias (percent) <sup>2</sup>		
			Before adjustment	After adjustment	Before adjustment	After adjustment	Absolute change
Base-year student [W1STUDENT]	85.7	60	18.3	0	1.2	0.1	-1.1
Base-year parent [W1PARENT]	67.5	60	23.3	1.7	1.5	0.6	-0.9
Base-year and First Follow-up student [W2W1STU]	74.3	66	33.3	0	1.6	0.3	-0.7
Base-year and 2013 Update [W3W1STU]	67.6	67	38.8	0	2.8	0.0	-1.0

<sup>1</sup> Bias is estimated by the difference between the percentage of respondents with a given characteristic and the percentage of nonrespondents with that same characteristic. These differences, i.e., bias estimates, were computed and tested for statistical significance at the 0.05 level.

<sup>2</sup> The (percent) relative bias is calculated as 100 multiplied by the estimated bias divided by the estimated value. The absolute relative bias is the absolute value of the (percent) relative bias.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10; First Follow-up, 2011–12; and 2013 Update.

S1FEEIN (39 percent), and X1SESQ5 (68 percent). For each of these variables, nonresponse bias analyses were conducted to determine whether respondents and nonrespondents differed on the following characteristics: school type, census region, locale, and student sex and race. Differences between respondents and nonrespondents on these variables were tested for statistical significance at the 5 percent level (exhibit 3).

Among the 11 variables with response rates less than 85 percent, respondents differed from nonrespondents on 0 to 67 percent of the characteristics analyzed, indicating that there may be bias in estimates based on at least some of these variables. Any bias due to nonresponse, however, is based upon responses prior to stochastic imputation, in which missing data are replaced with valid data from the records of donor cases that match the

recipients on selected demographic, enrollment, institution, and financial aid-related variables (Krotki, Black, and Creel 2005).

The potential for bias is tempered by imputation. Imputation procedures are designed specifically to identify donors with characteristics similar to those of respondents with missing data; therefore, imputation is assumed to reduce bias. Although the level of item-level

**Exhibit 3. Summary of item-level nonresponse bias analysis results**

Variable	Weighted item response rate	Pre-Imputation		
		Median percent relative bias across characteristics	Percent of characteristics with significant bias	Characteristic with greatest significant bias
<b>P1COSTIN</b>				
Parent tuition cost estimate	44.9	3.6	33.3	Other race
<b>P1ESTCONF</b>				
Parent confidence in tuition estimate	68.5	1.7	61.1	Other race
<b>P1ESTFEE</b>				
What parent's tuition estimate includes	67.9	1.7	61.1	Other race
<b>P1ESTIN</b>				
Parent tuition cost estimate	68.6	1.9	66.7	Other race
<b>P1FEEIN</b>				
What parent's tuition estimate includes	44.2	3.2	33.3	Other race
<b>S1COSTIN</b>				
Student tuition cost estimate	38.7	9.6	0	†
<b>S1ESTCONF</b>				
Student confidence in tuition estimate	72.9	1.7	25.0	Suburb
<b>S1ESTFEE</b>				
What student's tuition estimate includes	71.7	0.1	5.6	Male/Female
<b>S1ESTIN</b>				
Student tuition cost estimate	73.5	1.8	37.5	Suburb
<b>S1FEEIN</b>				
What student's tuition estimate includes	38.6	-2.1	22.2	Other race
<b>X1SESQ5</b>				
Socioeconomic status	68.3	2.6	43.8	Other race

† Not applicable.

NOTE: Bias is estimated by the difference between the percentage of respondents with a given characteristic and the percentage of nonrespondents with that same characteristic. The percent relative bias is calculated as 100 multiplied by the estimated bias divided by the estimated value. The bias estimates were tested for statistical significance at the 0.05 level. Other race includes White, American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and individuals who indicated Two or more races.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10; First Follow-up, 2011–12; and 2013 Update.

bias before imputation is measurable, the same measurement cannot be made after imputation.

For more detailed information on nonresponse bias analysis and an overview of the survey methodology, see the *High School Longitudinal Study of 2009 (HSLS:09) 2013 Update and High School Transcript Data File Documentation* (<https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2015036>).

### **Statistical Procedures**

Comparisons of means and proportions were tested using Student's *t* statistic. Differences between estimates were tested against the probability of a Type I error<sup>9</sup> or significance level. The statistical significance of each comparison was determined by calculating the Student's *t* value for the difference between each pair of means or proportions and comparing

the *t* value with published tables of significance levels for two-tailed hypothesis testing. Student's *t* values were computed to test differences between independent estimates using the following formula:

$$t = \frac{E_1 - E_2}{\sqrt{se_1^2 + se_2^2}}$$

where  $E_1$  and  $E_2$  are the estimates to be compared and  $se_1$  and  $se_2$  are their corresponding standard errors.

There are hazards in reporting statistical tests for each comparison. First, comparisons based on large *t* statistics may appear to merit special attention. This can be misleading because the magnitude of the *t* statistic is related not only to the observed differences in means or percentages but also to the number of respondents in the specific categories used for comparison. Hence, a small difference compared across

a large number of respondents would produce a large (and thus possibly statistically significant) *t* statistic.

A second hazard in reporting statistical tests is the possibility that one can report a "false positive" or Type I error. Statistical tests are designed to limit the risk of this type of error using a value denoted by alpha. The alpha level of .05 was selected for findings in this report and ensures that a difference of a certain magnitude or larger would be produced when there was no actual difference between the quantities in the underlying population no more than 1 time out of 20.<sup>10</sup> When analysts test hypotheses that show alpha values at the .05 level or smaller, they reject the null hypothesis that there is no difference between the two quantities. Failing to reject a null hypothesis (i.e., detect a difference), however, does not imply the values are the same or equivalent.

<sup>9</sup> A Type I error occurs when one concludes that a difference observed in a sample reflects a true difference in the population from which the sample was drawn, when no such difference is present.

<sup>10</sup> No adjustments were made for multiple comparisons.

## REFERENCES

- Arnold, K.D. (1995). *Lives of Promise: What Becomes of High School Valedictorians: A Fourteen-Year Study of Achievement and Life Choices*. San Francisco: Jossey Bass Publishers.
- Avery, C., and Kane, T.J. (2004). Student Perceptions of College Opportunities: The Boston COACH Program. In C.M. Hoxby (Ed.), *College Choices: The Economics of Where to Go, When to Go, and How to Pay for It* (pp. 355–391). Chicago: The University of Chicago Press and the National Bureau of Economic Research.
- Avery, C., and Turner, S. (2012). Student Loans: Do College Students Borrow Too Much—Or Not Enough? *The Journal of Economic Perspectives*, 26(1): 165–192.
- Bleemer, Z., and Zafar, B. (2014). Information Heterogeneity and Intended College Enrollment. Federal Reserve Board of New York Staff Report No. 685. Retrieved October 2, 2017, from [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=2477860](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2477860).
- Bowen, W.G., and Bok, D. (1998). *The Shape of the River: Long-Term Consequences of Considering Race in College and University Admissions*. Princeton, NJ: Princeton University Press.
- Bowen, W.G., Chingos, M.M., and McPherson, M.S. (2009). *Crossing the Finish Line: Completing College at America's Public Universities*. Princeton, NJ: Princeton University Press.
- Cabrera, A.F., La Nasa, S.M., and Burkum, K.R. (2001). *Pathways to a Four-Year Degree: The Higher Education Story of One Generation*. Retrieved January 25, 2015, from [https://www.researchgate.net/profile/Alberto\\_Cabrera3/publication/228582176\\_Pathways\\_to\\_a\\_Four-Year\\_Degree\\_The\\_Higher\\_Education\\_Story\\_of\\_One\\_Generation/links/00463534fda7e06d98000000.pdf](https://www.researchgate.net/profile/Alberto_Cabrera3/publication/228582176_Pathways_to_a_Four-Year_Degree_The_Higher_Education_Story_of_One_Generation/links/00463534fda7e06d98000000.pdf).
- Carnevale, A.P., and Strohl, J. (2010). How Increasing College Access Is Increasing Inequality, and What to Do About It. In R.D. Kahlenberg (Ed.), *Rewarding Strivers: Helping Low-Income Students Succeed in College* (pp. 71–190). New York: The Century Foundation Press.
- College Board. (2010). *Cracking the Student Aid Code: Parent and Student Perspectives on Paying for College*. Retrieved January 29, 2015, from <http://media.collegeboard.com/digitalServices/pdf/advocacy/homeorg/advocacy-cracking-student-aid-code.pdf>.
- College Board Advocacy and Policy Center. (2011). *Complexity in College Admission: The Barriers Between Aspiration and Enrollment for Lower-Income Students*. Retrieved January 9, 2015, from <http://media.collegeboard.com/digitalServices/pdf/advocacy/admissions21century/complexity-in-college-admission.pdf>.
- College Board and Art & Science Group. (2010). Students and Parents Making Judgments about College Costs without Complete Information. *Student Poll*, 8(1). Retrieved June 30, 2015, from [https://static1.squarespace.com/static/5810fea5e58c62bd729121cc/t/58bf26562994ca368856b3b6/1488922199521/studentPOLL\\_V8.1\\_May2010.pdf](https://static1.squarespace.com/static/5810fea5e58c62bd729121cc/t/58bf26562994ca368856b3b6/1488922199521/studentPOLL_V8.1_May2010.pdf).
- Horn, L.J., Chen, X., and Chapman, C. (2003). *Getting Ready to Pay for College: What Students and Their Parents Know About the Cost of College Tuition and What They Are Doing to Find Out* (NCES 2003–030). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Hossler, D., and Gallagher, K.S. (1987). Studying College Choices: A Three-Phase Model and the Implication for Policy Makers. *College and University*, 2: 207–221.
- Ikenberry, S.O., and Hartle, T.W. (1998). *Too Little Knowledge Is a Dangerous Thing: What the Public Thinks and Knows About Paying for College*. Washington, DC: American Council on Education.
- Ingels, S.J., Dalton, B., Holder, Jr., T.E., Lauff, E., and Burns, L.J. (2011). *High School Longitudinal Study of 2009 (HSL:09): A First Look at Fall 2009 9th-Graders* (NCES 2011–327). U.S. Department of Education. Washington, DC: National Center for Education Statistics.

- Ingels, S.J., Pratt, D.J., Herget, D., Bryan, M., Fritch, L.B., Ottem, R., Rogers, J.E., and Wilson, D. (2015). *High School Longitudinal Study of 2009 (HSLS:09) 2013 Update and High School Transcript Data File Documentation* (NCES 2015-036). U.S. Department of Education. Washington, DC: National Center for Education Statistics.
- Kane, T.J. (1998). Racial and Ethnic Preferences in College Admissions. In C. Jencks and M. Phillips (Eds.), *The Black-White Test Score Gap* (pp. 431–456). Washington, DC: Brookings Institution.
- Krotki, K., Black, S., and Creel, D. (2005). Mass Imputation. In *Proceedings of the Section on Survey Research Methods*, American Statistical Association. Alexandria, VA: American Statistical Association.
- Litten, L.H. (1982). Different Strokes in the Applicant Pool: Some Refinements in a Model of Student College Choice. *The Journal of Higher Education*, 53(4): 383–402.
- Long, B.T., and Kurlaender, M. (2009). Do Community Colleges Provide a Viable Pathway to a Baccalaureate Degree? *Educational Evaluation and Policy Analysis*, 31(1): 30–53.
- Luna de la Rosa, M. (2006). Is Opportunity Knowing? Low-Income Students' Perceptions of College and Financial Aid. *American Behavioral Scientist*, 49(12): 1670–1686.
- McDonough, P.M. (1997). *Choosing Colleges: How Social Class and Schools Structure Opportunity*. Albany, NY: State University of New York Press.
- McPherson, M.S., and Schapiro, M.O. (1991). *Keeping College Affordable: Government and Educational Opportunity*. Washington, DC: Brookings Institution.
- O'Connor, N., Hammack, F.M., and Scott, M.A. (2010). Social Capital, Financial Knowledge, and Hispanic Student College Choices. *Research in Higher Education*, 51(3): 195–219.
- Perna, L.W., and Titus, M.A. (2004). Understanding Differences in the Choice of College Attended: The Role of State Public Policies. *The Review of Higher Education*, 27(4): 501–525.
- Sallie Mae and Ipsos. (2016). *How America Pays for College 2016*. Retrieved July 21, 2016, from [http://news.salliemae.com/files/doc\\_library/file/HowAmericaPaysforCollege2016FNL.pdf](http://news.salliemae.com/files/doc_library/file/HowAmericaPaysforCollege2016FNL.pdf).
- Seastrom, M. (2014). *NCES Statistical Standards* (NCES 2014-097). U.S. Department of Education. Washington, DC: National Center for Education Statistics. Retrieved August 3, 2015, from <https://nces.ed.gov/statprog/2012/>.
- Snyder, T.D., and Dillow, S.A. (2011). *Digest of Education Statistics, 2010* (NCES 2011-015), Table 346. U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics.
- Snyder, T.D., and Dillow, S.A. (2013). *Digest of Education Statistics, 2012* (NCES 2014-015), Table 382. U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics.
- Warwick, J., and Mansfield, P.M. (2003). Perceived Risk in College Selection: Differences in Evaluative Criteria Used by Students and Parents. *Journal of Marketing for Higher Education*, 13(1/2): 101–125.
- Wolter, K. (2007). *Introduction to Variance Estimation*. Second Edition. New York: Springer-Verlag.



## APPENDIX A. DATA TABLES

**Table A-1. Estimates for figure 1: DISTRIBUTION OF 9TH-GRADERS' OVER- OR UNDERESTIMATION OF TUITION COSTS BY RACE/ETHNICITY**

**Percentage distribution of 9th-graders who over- or underestimated the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by race/ethnicity: 2009–10**

Race/ethnicity	Greater than 25 percent underestimate	Within 25 percent	Greater than 25 percent overestimate
<b>Total</b>	<b>32.0</b>	<b>11.2</b>	<b>56.7</b>
White	26.7	11.9	61.4
Black	45.6	9.7	44.7
Hispanic	37.0	11.6	51.3
Asian	25.4	8.8	65.8

NOTE: Black includes African American, and Hispanic includes Latino. The following race categories are not shown individually, although they are included in the total: American Indian/Alaska Native, Native Hawaiian/Pacific Islander, and individuals who indicated Two or more races. All race categories exclude Hispanic or Latino origin unless specified. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10.

**Table A-2. Estimates for figure 2: DIFFERENCE BETWEEN 9TH-GRADERS' ESTIMATES AND ACTUAL COST OF COLLEGE**

**Frequency of difference between 9th-graders' estimates and actual cost of 1 year of tuition and mandatory fees at a public 4-year college in their state: 2009–10**

Difference between actual cost and estimated cost	Number of students	Difference between actual cost and estimated cost	Number of students
-\$12,000	12,600	\$44,000	17,000
-10,000	53,100	46,000	5,900
-8,000	87,400	48,000	2,700
-6,000	216,500	50,000	3,400
-4,000	167,200	52,000	10,500
-2,000	134,700	54,000	3,200
0	100,900	56,000	800 !
2,000	122,600	58,000	1,500 !
4,000	74,200	60,000	3,200 !
6,000	56,500	62,000	3,400 !
8,000	73,300	64,000	2,500 !
10,000	47,100	66,000	1,300 !!
12,000	70,800	68,000	7,100
14,000	56,400	70,000	4,500 !
16,000	32,000	72,000	5,700
18,000	48,800	74,000	2,200
20,000	33,300	76,000	1,000 !!
22,000	37,900	78,000	1,600 !
24,000	23,400	80,000	1,200 !
26,000	10,300	82,000	7,500
28,000	23,300	84,000	1,800 !
30,000	18,100	86,000	1,500 !!
32,000	43,300	88,000	2,800 !!
34,000	19,100	90,000	2,800 !
36,000	11,900	92,000	2,600 !
38,000	18,400	94,000	2,300 !
40,000	16,600	96,000	600 !!
42,000	33,100		

! Interpret data with caution. Estimate is unstable because the standard error is between 30 and 50 percent of the estimate.

!! Interpret data with caution. Estimate is unstable because the standard error is greater than 50 percent of the estimate.

NOTE: Differences were computed by subtracting the actual, enrollment-weighted average cost from the student's estimate. Therefore, a positive difference indicates that the student's estimate was larger than the actual, enrollment-weighted average cost. The dollar amount listed in "Difference between actual cost and estimated cost" is the lower bound of that cost range. For example, 12,600 students had a difference between -\$12,000 and -\$10,000.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10.

**Table A-3. Estimates for figure 3: DISTRIBUTION OF 9TH-GRADERS' OVER- OR UNDERESTIMATES OF TUITION COSTS BY SOCIOECONOMIC STATUS**

**Percentage distribution of 9th-graders who over- or underestimated the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by socioeconomic status (SES): 2009–10**

Socioeconomic status (SES)	Greater than 25 percent underestimate	Within 25 percent	Greater than 25 percent overestimate
<b>Total</b>	<b>32.0</b>	<b>11.2</b>	<b>56.7</b>
Lowest fifth of SES	45.2	10.3	44.5
Middle three-fifths of SES	32.2	11.6	56.3
Highest fifth of SES	20.6	11.2	68.2

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

**Table A-4. Estimates for figure 4: CONFIDENCE IN ESTIMATED TUITION COST BY SOCIOECONOMIC STATUS**  
**Percentage distribution of 9th-graders' and their parents' level of confidence in their estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by family socioeconomic status (SES): 2009–10**

Family member and family SES	Not at all confident	Somewhat confident	Very confident
<b>Student</b>			
Lowest fifth of SES	20.5	62.0	17.5
Middle three-fifths of SES	28.5	57.1	14.4
Highest fifth of SES	33.7	56.3	10.0
<b>Parent</b>			
Lowest fifth of SES	37.9	53.7	8.3
Middle three-fifths of SES	32.0	56.0	12.0
Highest fifth of SES	23.5	58.9	17.6

NOTE: Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

**Table A-5. Estimates for figure 5: STUDENT UNCERTAINTY ABOUT COLLEGE TUITION COSTS**  
**Percentage of students who were not at all confident in their estimate of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state or who did not know the cost: 2009–10 and 2011–12**

Family member	Not at all confident (9th grade, 2009–10)	Don't know (11th grade, 2011–12)
<b>Student</b>	<b>26.9</b>	<b>51.0</b>

NOTE: Students were interviewed in 2009–10 when they were in 9th grade and again in 2011–12 when on-track students were in 11th grade. Estimate for 11th grade includes all students interviewed in 2011–12, regardless of whether they were in 11th grade at the time. Ninth-graders were not given the opportunity to report “I don’t know” in estimating tuition but instead were asked about their level of confidence in their ability to estimate tuition.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and First Follow-up, 2011–12.

**Table A-6. Estimates for figure 6: STUDENT-ESTIMATED AND ACTUAL COLLEGE TUITION DIFFERENCES**  
**Mean difference between students' 9th- and 11th-grade estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state and the actual difference in mean in-state tuition and mandatory fees at these schools between 2009–10 and 2011–12**

Difference	Difference in tuition estimates	Difference in actual tuition
Difference between 9th and 11th grades	\$1,500	\$1,000

NOTE: The students were interviewed in 2009–10 when they were in 9th grade and again in 2011–12 when on-track students were in 11th grade. Estimates for 11th grade include all students interviewed in 2011–12, regardless of whether they were in 11th grade at that time. Differences were computed by subtracting the student's estimate in 9th grade from his or her estimate in 11th grade. Therefore, a positive difference indicates that the student's estimate was larger in 11th grade than in 9th grade.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and First Follow-up, 2011–12. Snyder, T.D., and Dillow, S.A. (2011). *Digest of Education Statistics, 2010* (NCES 2011-015), Table 346. U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics. Snyder, T.D., and Dillow, S.A. (2013). *Digest of Education Statistics, 2012* (NCES 2014-015), Table 382. U.S. Department of Education, Institute of Education Sciences. Washington, DC: National Center for Education Statistics.

**Table A-7. Estimates for figure 7: STUDENTS' PERCEPTIONS OF COLLEGE AFFORDABILITY**  
**Percentage distribution of students' agreement that college is affordable, by student grade level: 2009–10 and 2011–12**

Grade level	Disagree/strongly disagree	Agree	Strongly agree
9th grade (2009–10)	25.2	50.3	24.5
11th grade (2011–12)	32.8	47.9	19.3

NOTE: The students were interviewed in 2009–10 when they were in 9th grade and again in 2011–12 when on-track students were in 11th grade. Estimates for 11th grade include all students interviewed in 2011–12, regardless of whether they were in 11th grade at that time. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and First Follow-up, 2011–12.

**Table A-8. Estimates for figure 8: STUDENTS' COLLEGE ENROLLMENT PLANS**  
**Percentage distribution of students' postsecondary education plans for the first year after high school, by student grade level: 2009–10 and 2013**

Grade level	No college program	Subbaccalaureate program	Baccalaureate program
9th grade (2009–10)	33.7	15.4	51.0
End of high school (2013)	32.6	22.6	44.9

NOTE: The students were interviewed in 2009–10 when they were in 9th grade and again in summer or fall of 2013 when on-track students had just completed their 12th-grade year.

Estimates for 2013 include all students interviewed in 2013, regardless of whether they had completed 12th grade at the time. Subbaccalaureate programs are any college programs below the bachelor's degree level, such as certificate or associate's degree programs. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and 2013 Update.

**Table A-9. Estimates for figure 9: STUDENTS' COLLEGE PLANS BY PERCEPTIONS OF COLLEGE AFFORDABILITY**  
**Percentage distribution of students' 2013 plans for the first year after high school, by their perceptions of college affordability in 9th grade: 2009–10 and 2013**

2013 college plans	Disagree/strongly disagree	Agree	Strongly agree
No college program	45.4	30.4	24.0
Subbaccalaureate program	24.9	22.8	19.9
Baccalaureate program	29.7	46.9	56.1

NOTE: The student's perceived affordability of college was measured in 2009–10 when the student was in 9th grade. The student's college plans were measured in summer or fall of 2013 when on-track students had just completed their 12th-grade year. Subbaccalaureate programs are any college programs below the bachelor's degree level, such as certificate or associate's degree programs. Detail may not sum to totals because of rounding.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and 2013 Update.

## APPENDIX B. STANDARD ERROR TABLES

**Table B-1. Standard errors for table A-1 and figure 1: DISTRIBUTION OF 9TH-GRADERS' OVER- OR UNDERESTIMATION OF TUITION COSTS BY RACE/ETHNICITY**

**Percentage distribution of 9th-graders who over- or underestimated the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by race/ethnicity: 2009–10**

Race/ethnicity	Greater than 25 percent underestimate	Within 25 percent	Greater than 25 percent overestimate
<b>Total</b>	<b>0.99</b>	<b>0.56</b>	<b>1.10</b>
White	0.95	0.69	1.04
Black	3.83	1.77	3.41
Hispanic	2.01	1.86	2.51
Asian	3.14	1.97	3.64

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

**Table B-2. Standard errors for table A-2 and figure 2: DIFFERENCE BETWEEN 9TH-GRADERS' ESTIMATES AND ACTUAL COST OF COLLEGE**

**Frequency of difference between 9th-graders' estimates and actual cost of 1 year of tuition and mandatory fees at a public 4-year college in their state: 2009–10**

Difference between actual cost and estimated cost	Standard error of the number of students	Difference between actual cost and estimated cost	Standard error of the number of students
-\$12,000	2,510	\$44,000	2,170
-10,000	4,930	46,000	1,500
-8,000	6,350	48,000	790
-6,000	11,040	50,000	930
-4,000	10,140	52,000	2,190
-2,000	7,400	54,000	870
0	7,680	56,000	410
2,000	6,840	58,000	530
4,000	4,600	60,000	1,330
6,000	4,210	62,000	1,190
8,000	5,290	64,000	780
10,000	3,590	66,000	700
12,000	5,530	68,000	1,490
14,000	4,370	70,000	2,000
16,000	3,370	72,000	1,390
18,000	5,100	74,000	600
20,000	3,600	76,000	560
22,000	4,220	78,000	580
24,000	2,710	80,000	530
26,000	1,820	82,000	1,980
28,000	2,660	84,000	530
30,000	2,290	86,000	740
32,000	4,020	88,000	2,120
34,000	2,630	90,000	920
36,000	2,340	92,000	960
38,000	2,700	94,000	850
40,000	2,310	96,000	580
42,000	3,790		

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

**Table B-3. Standard errors for table A-3 and figure 3: DISTRIBUTION OF 9TH-GRADERS' OVER- OR UNDERESTIMATES OF TUITION COSTS BY SOCIOECONOMIC STATUS**

**Percentage distribution of 9th-graders who over- or underestimated the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by socioeconomic status (SES): 2009–10**

Socioeconomic status (SES)	Greater than 25 percent underestimate	Within 25 percent	Greater than 25 percent overestimate
<b>Total</b>	<b>0.99</b>	<b>0.56</b>	<b>1.10</b>
Lowest fifth of SES	2.48	1.59	2.88
Middle three-fifths of SES	1.11	0.74	1.16
Highest fifth of SES	1.40	1.07	1.58

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

**Table B-4. Standard errors for table A-4 and figure 4: CONFIDENCE IN ESTIMATED TUITION COST BY SOCIOECONOMIC STATUS**

**Percentage distribution of 9th-graders' and their parents' level of confidence in their estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, by family socioeconomic status (SES): 2009–10**

Family member and family SES	Not at all confident	Somewhat confident	Very confident
<b>Student</b>			
Lowest fifth of SES	2.30	2.14	1.76
Middle three-fifths of SES	1.18	1.36	0.84
Highest fifth of SES	1.42	1.49	0.95
<b>Parent</b>			
Lowest fifth of SES	2.36	2.66	1.39
Middle three-fifths of SES	1.16	1.21	0.76
Highest fifth of SES	1.29	1.47	1.15

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10.

**Table B-5. Standard errors for table A-5 and figure 5: STUDENT UNCERTAINTY ABOUT COLLEGE TUITION COSTS**  
**Percentage of students who were not at all confident in their estimate of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state or who did not know the cost: 2009–10 and 2011–12**

Family member	Not at all confident (9th grade, 2009–10)	Don't know (11th grade, 2011–12)
<b>Student</b>	<b>0.69</b>	<b>0.82</b>

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and First Follow-up, 2011–12.



**Table B-6. Standard errors for table A-6 and figure 6: STUDENT-ESTIMATED AND ACTUAL COLLEGE TUITION DIFFERENCES**

**Mean difference between students' 9th- and 11th-grade estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state and the actual difference in mean in-state tuition and mandatory fees at these schools between 2009–10 and 2011–12**

Difference	Difference in tuition estimates	Difference in actual tuition
Difference between 9th and 11th grades	\$740	†

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10 and First Follow-up, 2011–12.

**Table B-7. Standard errors for table A-7 and figure 7: STUDENTS' PERCEPTIONS OF COLLEGE AFFORDABILITY**  
**Percentage distribution of students' agreement that college is affordable, by student grade level: 2009–10 and 2011–12**

Grade level	Disagree/strongly disagree	Agree	Strongly agree
9th grade (2009–10)	0.68	0.66	0.71
11th grade (2011–12)	0.77	0.63	0.54

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10 and First Follow-up, 2011–12.

**Table B-8. Standard errors for table A-8 and figure 8: STUDENTS' COLLEGE ENROLLMENT PLANS**  
**Percentage distribution of students' postsecondary education plans for the first year after high school, by student grade level: 2009–10 and 2013**

Grade level	No college program	Subbaccalaureate program	Baccalaureate program
9th grade (2009–10)	0.70	0.58	0.77
End of high school (2013)	0.72	0.72	0.94

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10 and 2013 Update.

**Table B-9. Standard errors for table A-9 and figure 9: STUDENTS' COLLEGE PLANS BY PERCEPTIONS OF COLLEGE AFFORDABILITY**  
**Percentage distribution of students' 2013 plans for the first year after high school, by their perceptions of college affordability in 9th grade: 2009–10 and 2013**

2013 college plans	Disagree/strongly disagree	Agree	Strongly agree
No college program	1.78	0.99	1.21
Subbaccalaureate program	1.65	0.82	1.22
Baccalaureate program	1.75	1.17	1.38

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSLS:09), Base Year, 2009–10 and 2013 Update.

**TABLE B-10. Standard errors for table 1. 9TH-GRADERS' AND PARENTS' TUITION ESTIMATES, ACTUAL AVERAGE TUITION, AND CONFIDENCE, BY STATE**

**Students' and parents' estimates of the cost of 1 year of tuition and mandatory fees at a public 4-year college in their state, the actual average in-state annual cost, and students' and parents' confidence in their estimates, by state: 2009–10**

State	Actual, enrollment-weighted average in-state annual cost	Median difference	Mean difference	Percent very confident
Students				
<b>U.S. total</b>	†	<b>\$260</b>	<b>\$370</b>	<b>0.56</b>
California	†	1,630	1,640	2.22
Florida	†	930	970	2.86
Georgia	†	†	1,310	3.08
Michigan	†	1,870	1,770	1.90
North Carolina	†	1,780	970	2.38
Ohio	†	1,310	1,640	3.52
Pennsylvania	†	†	1,860	2.25
Tennessee	†	1,610	1,650	2.88
Texas	†	280	1,150	2.05
Washington	†	450	1,070	2.41
Parents				
<b>U.S. total</b>	†	<b>260</b>	<b>240</b>	<b>0.58</b>
California	†	1,620	1,140	2.43
Florida	†	1,560	1,270	2.62
Georgia	†	—	580	2.58
Michigan	†	1,410	740	2.07
North Carolina	†	980	670	1.78
Ohio	†	1,060	710	2.46
Pennsylvania	†	540	560	1.88
Tennessee	†	740	890	2.19
Texas	†	1,420	1,010	1.99
Washington	†	1,330	850	2.44

— Not available. Standard error could not be estimated because there was too little variation around the median.

† Not applicable.

SOURCE: U.S. Department of Education, National Center for Education Statistics, High School Longitudinal Study of 2009 (HSL:09), Base Year, 2009–10 and Integrated Postsecondary Education Data System (IPEDS), 2009.

## RUN YOUR OWN ANALYSIS WITH DATALAB

You can replicate or expand upon the figures and tables in this report, or even create your own. DataLab has several different tools that allow you to customize and generate output from a variety of survey datasets. Visit DataLab at

<https://nces.ed.gov/datalab/>

### NCES DATALAB

*Education data through fast, flexible, and powerful tools*

Get started using DataLab:

<https://nces.ed.gov/datalab/>

